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ABSTRACT

Although many dimensions of multimedia are already familiar to technical communicators and educators, producing documents with this technology requires a complete reconceptualization of the communication process. One major obstacle to developing a multimedia rhetoric is the power that print technology holds over people's ideas concerning formal or "official" information. The model of written communication that still dominates writing instruction courses is centered on text, with the writer, reader, and subject matter interacting through text. From a semiotic perspective, nonwritten media communicate through intricate systems of formal codes which are analogous to literacies. A suggested model of multimedia communication decenters the primacy of print in favor of a more democratic view of the communication environment as one that is made up of many sources and many media. Elements of the model are the developer, the user, the context/purpose, and the communication environment. Elements of the communication environment include the platform/interface, presentation environment, print information, visual information, tactile information, cultural/historical information, and audio information. The idea of a multimedia rhetoric involves ongoing negotiation and interpretation at all levels of design and production. Researching methods of making multimedia the most transparent technology possible is a good investment in the future of the information highway. (Two figures are included.) (RS)

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After Words: A Rhetoric of Multimedia Communication

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With the information age well upon us, multimedia brings new challenges for technical communicators. Multimedia's potential as a training and research tool is great, but requires a new way of thinking about producing information. Using a semiotic approach, this article presents a rhetorical model of multimedia communication.

As the ads in computer magazines keep telling us, the multimedia revolution is here. If we haven't already used multimedia computers by now, we have at least seen an enormous amount and variety of advertisements and product literature on multimedia computing systems. We know that multimedia computers have CD-ROM drives, and that they provide instant access to movies, graphics, animation and sound on our monitors. We also know that there is a steadily growing number of educational, training, and business applications in multimedia programs. If we are familiar with video games and hypertext, we also are familiar with navigating our way around in a multiple-medium environment. Since we already know so much about multimedia, designing and authoring multimedia presentations and publications should come almost as second nature. Right?

Unfortunately, the transition from written to multimedia communication is not as easy as simply being able to do what we see and hear from familiar computer applications. Although many dimensions of multimedia are already familiar to us, producing documents with this technology requires a complete reconceptualization of the communication process, a reorientation which many technical communicators may find difficult to adjust to. Multimedia is not just a new technology, but a new state of mind as well. Since the last paradigm shift -- the invention of the printing press – books, pamphlets, journals, and other manner of printed matter have dominated public perceptions about information. Multimedia computers, however, are ushering in the next paradigm shift. As noted by Barrett (1992), when we produce a new communication medium, we are also "hardwiring" our brains to produce and process information

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in this medium (p. 1) . To begin the mental rewiring for multimedia, it is necessary to overhaul traditional concepts of communication, describe the rhetoric of multimedia communication, and discuss some of the elements and conventions used in multimedia projects.

Reading, Writing and the Rhetoric of Multimedia

One major obstacle to developing a multimedia rhetoric is the power that print technology holds over people's ideas concerning formal or "official" information. The common expression, "put it in writing," attests to the significance and meaning that people attach to written communication. If something is not written down, it is not true, not legal, or not binding in a majority of cases. As such, our orientation to communication is still predominantly centered in a concept of the authority of the written word and its power to shape formal experience. For example, the model of written communication presented below (Figure 1) still dominates the foreground in most writing instruction courses, including technical writing courses.

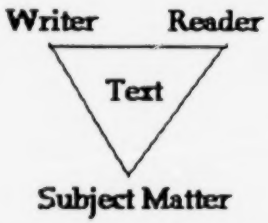

Fig. 1. Written Model of Communication

For the purpose of teaching writing, this model has helped people orient their written communications for specific audiences. Because the entire model is centered in the text, however, it reinforces the idea that printed matter is the best, and perhaps only formal medium for transmitting information. This attitude toward written communication is reflected in the emphasis given to training individuals to be print literate in the schools, the government, and the publishing industry -- that is to say, it is a given that everyone in the United States should learn to read and write in order to become good citizens and good consumers of printed matter.

While learning to read and write does help people become literate in the conventional sense, the argument presented here is that traditional models and approaches to written communication are not adequate for preparing technical communicators to become multimedia literate. The recent emphasis on visual communication is a good step toward developing multimedia literacy, but we also need to become users and designers of sound, moving pictures, and animation, and to learn ways of integrating all of these elements into a coherent electronic document. Hodges and Sasnett (1993) describe multimedia communication as nonliterate because it is based in television, radio, film and the telephone -- media which are all based in nonwritten communication (p.6). This view seems rooted in the idea that only written communication has anything to do with literacy. From a semiotic perspective, however, even nonwritten media communicate through intricate systems of formal codes which are analogous to literacies. For example, if a television sitcom did not follow certain codes (or conventions) of plot, character, subject matter, and so on, no one would be able to recognize it as a sitcom. Conventions and codes of this type also help viewers to distinguish between different genres of film (comedy, drama, thriller, and horror); music (classical, new age, big band, and bluegrass); and television shows (comedy, drama, talk shows, and news programming). Thus, all media

have corresponding literacies for understanding them, and written communication and literacy are not privileged in any way which makes them the only kind of literacy in town. I am not suggesting that print-based literacy has become obsolete, but that it is only one part of a complex multimedia communication equation. Below is a suggested model of multimedia communication (Figure 2) which decenters the primacy of print in favor of a more democratic view of the communication environment as one that is made up of many sources and many media.

Fig. 2. Multimedia Communication Model

-**Developer**: There is no single author of a multimedia publication. Instead, Rosen (1994) notes that multimedia projects are undertaken by a team most closely resembling that of a movie production team. Developers of a multimedia product include:

-Investors	-Producers	-Sales and Marketing Group
-Technology Lawyers	-Directors	-Animators
-Video Specialists	-Audio Specialists	-Graphic Artists
-Writers	-Context Experts	-Coders and Interface Designer

The negotiations that take place among these groups could be called a rhetoric of inter-media, because that is essentially what happens -- members of a multimedia project team must be able to communicate across media, just as international translators need to communicate across cultures. Communication in a particular medium is very much like a culture with its own conventions and codes; thus learning how to integrate various media into a coherent electronic document can be just as complex a matter as negotiating a peace treaty among warring countries. To approach inter-media constructively, writers must learn more of what the graphic designers do; graphic designers need to learn more about what sound designers do; and sound designers must learn more of what the writers do. In short, the members of the team need to learn what other members are doing and how they do it in order to reduce the number of content and design conflicts that inevitably arise.

-**User** : Multimedia product developers always need to keep the user's needs in mind when designing at all levels, including content, navigation, and interface. For example, given the number of multimedia products aimed at children and younger students, one needs to also consider the user's age level, cognitive abilities at that level, appropriateness of material for that level in terms of content and navigation, and interface concerns (touch screen vs. mouse, for

instance, or a combination of the two). Overall, users ultimately determine whether or not a title is published, upgraded, and kept on the market, so it is a good idea to integrate a mechanism for collecting and integrating user feedback into subsequent versions of a product.

-**Context/Purpose**: The context and purpose of communication are considered to be the primary element in the model presented here because these are the forces that drive all communication -- something to say and a place to say it. The rhetorical features of context/purpose include:

-**The occasion of use (context)**: Where is the information being used? Is the product used for work, research, training, education, leisure, or a combination of the above? Is the product used by a single user or a group? If used by a group, networking will need to be integrated with the interface.

-**Use of the product (purpose)**: Why is the information being used? Is the product a reference or training application? Is it a game or enabling tool? How will the use of the product influence the way it is designed, accessed, and evaluated? For example, a training application will need to be much more structured, and less open-ended than a reference application, or a game. Not all multimedia products are created alike, and keeping the context and purpose of the product in mind *before* it is designed will help the development process be more cost-effective.

-**Communication Environment**: The most radical difference from models of print-based communication is the concept of the communication environment. Essentially, the multimedia environment consists of a computer monitor, and all available media which can be presented in that environment (text, audio tracks, visuals, movies). Rather than focusing on how information operates in one medium, the idea of the communication environment is perhaps the most critical factor needed to become multimedia literate. When one can overcome the tendency to think that communication can only occur in relatively stable media (i.e., books, magazines, television and computer programs, movies, slide presentations, and so on), it is possible to appreciate how all these media mingle and transform in a multimedia communication environment.

The key to mastering the communication environment becomes a matter of deciding whether a piece of text, a visual, or an audio track is the best rhetorical option for a particular user, or if a combination is the best approach so that the user has a number of media to use in gaining information. For example, Bates (1980) indicates that the best learning takes place when a combination of media are used (p. 399). The more senses stimulated, the greater the receptivity to and retention of information. Knowing this, designers of multimedia documents should include as many media as possible to ensure the greatest learning value. Some important elements of the communication environment include:

-**Platform/Interface**: The debate over which computer system is best, DOS vs. Macintosh, will continue for years to come, but designers of multimedia information need to consider which system their product is intended for, or if it can be designed for both. The most important feature of computer systems is the interface, and deciding whether a multimedia program can be used through a keyboard, mouse, touch screen, or even a joystick is an important part of the information map which will orient the user to the product.

-**Presentation Environment**: The presentation environment refers to the form in which information is presented to the user. The type of multimedia presentation discussed here ordinarily uses a computer screen at a terminal or kiosk as the presentation environment. The most important design feature of the presentation environment is an information map. The information map acts like a master menu or table of contents, and it directs the user's attention and guides him/her through the full range of information available and how to get to it.

Once an information map has been established, the environment depicted on the monitor is made up of three important elements: **Slides**, **Portals** and **Buttons**.

-**Slides**: Slides are the elementary building blocks of a multimedia presentation. Slides can contain a piece of text, a photo or drawing, a film or videotape, or animation. A good analogy for a slide is a sound bite – a short, condensed, and highly focused piece of information which can be understood immediately. As a result, several scrolled pages of text do not make for a well-designed slide, unless that information is essential for a particular context and purpose, such as a complex training program. If a large amount of printed material is needed for an application, multimedia presentation is probably not the best environment to use. Instead, slides should be modular, or self-contained, so that they can stand on their own. Two ways to approach slide design which are familiar from other media are **storyboarding** and **scripting**. Individual slides, or a group of slides under a subject topic, can be storyboarded or scripted one slide at a time. Unlike the use of these tools in television and film, there is no overall linear story to tell -- there is just a range of information from various media, and a context and purpose for each slide, so designing a complete storyboard or script is counterproductive to interactive multimedia communication, unless the training demands of the presentation require an overall structure.

-**Portals**: Portals are the spaces or windows on the computer screen in which the slides appear. Important considerations in portal design are size, number and placement. The **size** of a portal is important because a user must be able to see the information presented. If a film is shown in a 1" x 2" portal on the screen, much of the visual information contained will not be very accessible to the user, and the audio track will become foregrounded. Many multimedia programs featuring film will design for a full screen portal when films or videos are shown. For media other than film, such as photos or small textboxes, a 2" or 3" square should be adequate. The **number** and **placement** of portals is also important in overall design. Unlike the windows environment on computers, where numerous windows can overlap each other, each portal in a multimedia presentation must be an autonomous entity, and not be interrupted or obscured by another portal. Designers should consider no more than three or four portals per screen, unless multiple comparisons to an object or stages in a process need to be shown. Portals should be placed toward center screen in order to best focus the user's attention

-**Buttons**: The navigation cues in multimedia programs are provided by **buttons** Buttons can be two-or three-dimensional, and can be activated by a keyboard, mouse, or touch screen. Buttons can be used for orientation purposes, such as providing an information map of the kind and range of information in a presentation, like a menu. They can also provide navigational cues to get the user from one point to another, like the "go to the next screen" or "go to the next topic" buttons we have all seen on information kiosks.

-**Print Information**: Written words can be presented in scanned text from newspapers, magazines, journals, and so on, or by using a character generator. Character generators give greater freedom of design for print that appears on a computer screen, but scanned text is better for providing a reproduction of the original material used.

-**Visual Information**: Visual information works on two levels. First, the screen itself, a large part of the communication environment, is a visual display. Second, the information contained in the screen is also visually displayed. A gestalt approach to visual design in multimedia environments can be used to integrate both levels of visuals into one coherent, overall design. Typically, multimedia visuals will be still or moving images. Reproducing visual information can be very costly, making it necessary to plan and budget for visuals carefully.

-**Tactile Information**: Tactile information refers to 3-dimensional design of on screen buttons and portals, and to background designs. Adding a third dimension helps users to respond to objects on the screen by making a button look like something one can press. This kind of 3-

dimensionality can better help users orient themselves to the different features of an on-screen environment. Textured backgrounds can also make for more appealing presentation of information. One rule to follow is to not overdo tactile information. For example, a 3-D button should not appear on a textured screen.

-Cultural/Historical Information: This category refers to cultural and historical codes present in all media. In addition to presenting information accurately and effectively in the presentation environment, designers also need to be aware of making multimedia communication culturally sensitive and appropriate for the intended user. This is also an important consideration in international multimedia design. An image which may not offend the designer may be highly offensive to users in the overseas market, and serious attention needs to be given to finding out what other cultures find offensive and acceptable in visual and audio media.

-Audio Information: Audio information can include narration, dialogue, and voice-over, but it also contains music, sound effects, and natural sounds. Spoken words can be presented as narration, with an on-screen narrator, or as a voice-over. It is important to consider the recording volume of sounds when integrating them with other media. Too loud a sound can distract from information in other media present at the same time. Too soft a sound can have the same effect. When using music, a song or musical style that may be contemporary today, may sound dated in a short time. Consider how long of a lifespan your product will have, and choose music accordingly. The cost of using copyrighted musical material is also a factor in developing the audio budget.

The space allotted in this proceedings is sufficient for only the briefest overview of the rhetoric of multimedia communication, and some of the many key concerns of multimedia product development. In summary, the idea of a multimedia rhetoric involves ongoing negotiation and interpretation at all levels of design and production. The Developer, User, Context and Purpose, and Communication Environment need to be as well integrated as possible, and focused on a common goal of creating the most usable product in this medium. Researching methods of making multimedia the most transparent technology possible is a good investment in the future of the information highway.

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BIOSKETCH

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